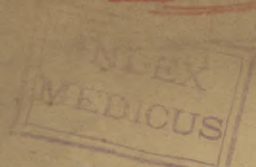


DEW (J. H.)



Establishing a New Method of Artificial Respiration in Asphyxia Neonatorum

BY

J. HARVIE DEW, M.D.

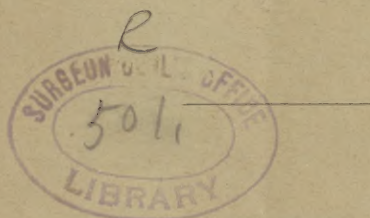
NEW YORK

CORROBORATED BY

DRS. GEO. T. HARRISON, VON BEVERHOUT THOMPSON,
WM. A. EWING, EGBERT H. GRANDIN, WM. T.
LUSK, J. CLIFTON EDGAR, EDWARD A.
AYERS, AND JOSEPH D. BRYANT

WITH FOUR ILLUSTRATIONS

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ESTABLISHING A NEW METHOD OF ARTIFICIAL RESPIRATION IN ASPHYXIA NEONATORUM.

THE best method of practising artificial respiration in asphyxia neonatorum has, within a comparatively recent period, been made a subject for discussion by Dr. Lusk's most excellent paper read before the Academy in December, 1890, and published in the *American Journal of the Medical Sciences* for February, 1891, and more recently by Dr. W. E. Forest's article in the *Medical Record* of April 9th, 1892.

Prof. Lusk offered no new method, but discussed and made more prominent the method known as that of Schultze, and impressed the importance of the use of the catheter for the removal of mucus and foreign matter from the trachea and larger bronchi, and also its use in artificial respiration by direct inflation.

In the discussion which followed this paper I took occasion to state that for many years I had practised a method which I regarded as original, and which I believed to be of great practical value.

Dr. Forest, in the *Medical Record*, finds all of the adopted methods in one way or another faulty, and presents one of his own (another modification of Sylvester) as "filling the bill."

Of my statements before the Academy he writes: "Another method that has been widely advocated and practised, and yet is utterly worthless, is Schröder's. At a recent meeting of the New York Academy of Medicine, a physician present [referring to myself] claimed that this method was most efficient and put it forward as original with himself. In both cases it will be seen he was mistaken."

Dr. Forest then describes "Schröder's well-known method," as he terms it, not as Schröder himself describes it, but approximately, as I described mine before the Academy in 1890.

In this paper I desire to show: 1. That Schröder's method is no more like mine than mine is like that of Schultze. Also that the principle and the object of all three of these methods, viz., those of Schröder, Schultze, and my own are nearly or about the same, while the plan of procedure is entirely different. 2. That my plan is original, having been adopted independent of any idea secured from text books or elsewhere, and that I practised it in 1871, at least three years before Schröder's



first publication of a method, which appeared in 1874, and before I had ever known of Schultze or of his method, which was published in 1871. 3. That my method is the promptest, most powerful, and most efficient for immediate use which can be practised with perfect readiness and ease to the operator.

Schröder, in his work on obstetrics, seventh edition, 1882, seems to especially advocate Schultze's method, which should be performed by "grasping the infant in such a manner that the operator's thumbs shall rest on either side upon the anterior thoracic wall, while the index finger occupies the axilla and the remaining fingers are placed diagonally across the back. The child is then allowed to hang at arm's length between the knees of the obstetrician, its face being turned to the front. The child is next swung upward until the arms of the operator reach an almost horizontal position." These two movements induce inspiration. "The swinging motion is then arrested, flexion occurs in the child's lumbar spinal region, its head is directed downward, and its lower extremities fall slowly toward the obstetrician until the whole weight of its body rests upon his thumbs" This movement induces expiration.

Schröder next speaks of catheterization for the removal of mucus, etc., and in presenting what is termed his method advocates it in no terms of special commendation, but apparently in the most casual way. He simply says: "If no foreign particles have been breathed in, or if they have already been removed, then one can employ artificial respiration in still other ways, thus: While the babe is in a bath one can enlarge the thorax, in that one supports the back of the babe while its head, arms, and pelvis fall backward; a forceful expiration is then effected by bending up the baby over its belly, thereby compressing the thorax." This is literally all that Schröder has to say of this method for which he has been given credit.

Francis Henry Champneys, in his article reporting his experiments on the cadavera of still-born children, published in the "Medico-Chirurgical Transactions," dated 1881, condemns Schröder's method as worthless. He presents the method as follows: "Schröder suggests [please note the fact that Champneys does not say that even Schröder himself ever advocated or practised this method, but merely that he suggests] supporting the child by the back only, letting the arms and legs fall backward, which will produce opisthotonos, and then bending them in the contrary direction, producing emprosthotonos. The latter to produce expiration, the former inspiration."

The only description of Schröder's method I have been able

to find in any English or American text book appeared in the first edition of Lusk's work on obstetrics, and he has not thought it of sufficient value to reproduce it in subsequent editions. Yet Dr. Forest says in his article that it "has been widely advocated and practised," and at the same time quotes Champneys and declares it worthless.

I do not believe that any one could successfully practise this method as Schröder directs, or that it has ever been taught or "advocated."

The plan I have adopted is not so much like Schröder's as those of Pacini, Bain, Schücking, Schüller, and Forest are like Sylvester's.

I mention this fact because there is a most important difference to which I desire to call attention. It is that all of these methods named have been suggested by, and are simply, to a large degree, modifications of that of Sylvester, while my plan was suggested by no previously adopted method. At the time I began its practice Schröder's method was not in existence, or certainly had not been published; and Schultze's method was in its infancy, and entirely unknown to me.

I cannot now remember exactly when I began to practise this method. The first instance I can well authenticate occurred in the practice of Dr. George T. Harrison, of this city, who is present with us to-night.

I was called by him to assist in a difficult case of labor which he was attending in the old building that stood at the corner of Fifth avenue and Fifty-fourth street, on the ground now occupied by the handsome "Vanderbilt" residences of Twombly and Webb. This was in the latter part of 1871. The infant at birth was thoroughly asphyxiated. The work of resuscitation devolved on me. It took considerably over an hour to fully establish the respiratory process. My method was then practised to relieve myself of the fatigue which that of Sylvester imposed, so the two methods were alternated during the treatment. I have continued its use, almost exclusively, from that time till now.

DESCRIPTION OF METHOD.

My directions for its practice are: To grasp the infant with the left hand, allowing the neck to rest between the thumb and forefinger, the head falling far over backward, straightening the mouth with the larynx and trachea, thereby serving to raise and hold open the epiglottis (as demonstrated by Benjamin Howard in his excellent article, "A New and Only Way of Raising the Epiglottis," *British Medical Journal*, November, 1888). The

upper portion of the back and scapulæ resting in the palm of the hand, the other three fingers to be inserted in the axilla of the baby's left arm, raising it upward and outward. (See Fig. 1.)

Then, with the right hand if the baby is large and heavy, grasp the knees in such a way as to hold them with the right knee resting between the thumb and forefinger, the left between the fore and middle fingers. This position will allow the back of the thighs to rest in the palm of the operator's hand. If the infant is small and light, it will be found more convenient and easier to hold it in the same way by the ankles instead of the knees, allowing the calves instead of the thighs to rest in the palm of the hand.

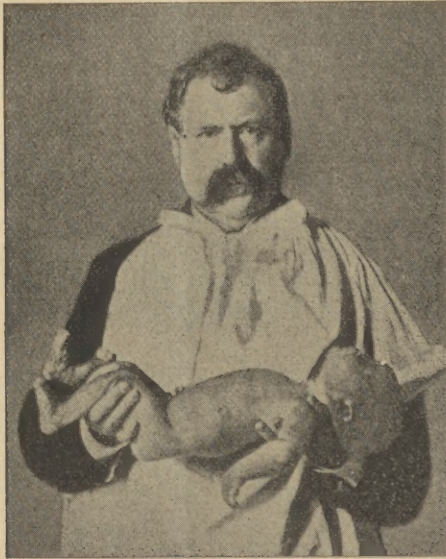


FIG. 1.

The next step is to depress the pelvis and lower extremities, so as to allow the abdominal organs to drag the diaphragm downward, and with the left hand to gently bend the dorsal region of the spine backward. This enlarges the thoracic cavity and produces inspiration. (See Fig. 2.)

Then, to excite expiration, reverse the movement, bringing the head, shoulders, and chest forward, closing the ribs upon each other, and at the same moment bring forward the thighs, resting them upon the abdomen. This movement arches the lumbar region backward, and so bends the child upon itself as to crowd together the contents of the thoracic and abdominal cavities, resulting in a most complete and forcible expiration. (See Fig. 3.)

While this movement is a powerful one, the operator can, by

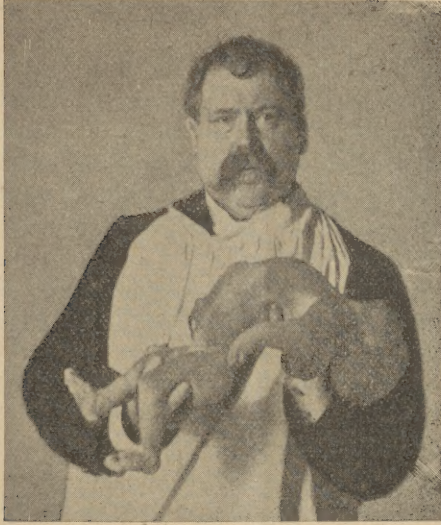


FIG. 2.

his manipulations, accomplish it without shock and render it as gentle as he pleases.



FIG. 3.

CHAMPNEYS' EXPERIMENTS.

It is evident from Dr. Forest's article in the *Medical Record*, already alluded to, in which he condemns Schröder's method as

worthless, that the plan I propose will be denounced by some one, and for the same reasons that Champneys assigned in discussing Schröder's method.

I therefore think it best to state that Champneys' experiments were made by securing one end of a tube in the larynx of a still-born cadaver, while the other end was immersed in a fluid. He then endeavored, by exciting the inspiratory act, as directed in the different methods of artificial respiration, to determine by the ascent of the fluid how much air each one of them was capable of sucking in.

His experiments led him to the conclusion that the methods of Schultze and Sylvester will suck in the greatest amount; that the modifications of the Sylvester method are the next most powerful, and that those of Howard, Marshall Hall, and Schröder excite no perceptible suction, hence are worthless.

These experiments were all made on the cadavera from twenty-four to thirty-six hours after birth, when rigor mortis had, or certainly had had time to become as fully established as is usual in such cases. Under these circumstances it seems to me easy to understand that the active and forcible procedures incidental to the Schultze and Sylvester methods would exhibit a decided suction, while the much more passive movements of the Howard and Marshall Hall methods, and the plan "suggested" by Schröder, would draw in no appreciable amount of air. I cannot see how any other results could have been expected.

Only think! Take an infant thirty-six hours dead, with the muscles, ligaments, cartilages, and even the bones to a certain extent stiffened, or deprived of their elasticity, place a tube in its larynx as stated, and then with a hand supporting its back allow the head and shoulders to gravitate to one side, its pelvis and legs to the other. Now, how much air do you suppose is going to be sucked in? I should certainly answer none, even if I had never heard of Champneys and his experiments.

Finding by this exceedingly passive movement of producing opisthotonos in the cadaver that no air was drawn in, Champneys at once proceeded to account for the failure by stating that this method (Schröder's) is based upon the *a priori* reasoning that the capacity of a flexible cylinder increases when it is curved, and concludes as follows: "But the principal reason lies in the fact that in children who have never breathed the position of the thorax is one of expiration and not of inspiration, the thoracic walls are completely collapsed, and there is no thoracic cavity or cylinder to deal with. There is nothing to

procure descent of the diaphragm, and the thoracic cavity cannot be expanded in any direction by such means."

Some of the features of the plan I have adopted are more like to Schröder's than to any other thus far published. This fact, and the comments that have been made, have led me to direct your attention thus especially to what Schröder's so-called method is, and to what has led Champneys to condemn it. I do not think these conclusions will apply at all to my method, and I hope you will all agree with me when I present to you the following

EXPLANATION OF METHOD.

At birth an asphyxiated infant is perfectly limp and flexible. Its muscles are like so many wet rags and offer no resistance till stretched out to near or about the limit of their elasticity. In the Sylvester method the ribs are not lifted till the pectoral muscles have been put well upon the stretch, for the accomplishment of which the arms must be forcibly pulled upward.

When this is done the chest cavity is increased laterally, and the diaphragm is flattened out, pressing the abdominal organs to some extent downward, thus serving, in a measure, to increase the cavity vertically. This produces the suction which every one recognizes, and which has made this method, up to date, the most universally known and adopted.

My method accomplishes exactly the same results in a different way. To understand how it is done, let us consider for a moment the anatomical structure of the chest walls. These walls are supported by, and have their fixed point in the attachment of the ribs to the dorsal vertebræ. They are composed mainly of the ribs, their cartilages, the sternum, and the intercostal and pectoral muscles.

The muscles, as stated, offer no resistance and no assistance, except for traction.

The ribs constitute not only the most prominent structure in the formation of the chest walls, but their movements are essentially important in any effort artificially or naturally to draw air into the lungs. It is upon their peculiar arrangement, formation, and attachments that the active inspiratory movement of my method depends.

They are twelve in number on each side, and are separated from each other at well-defined distances. They vary in both length and shape from the first to the twelfth. They can be made to very closely approximate, if not to overlap each other, and are capable of as wide a separation as the elasticity of the

intercostal muscles will permit. They terminate at the sternum in flexible cartilages, which vary in length and render them very movable.

Posteriorly they have almost a fixed attachment. Their heads are closely bound by a strong ligamentous union to the bodies of the dorsal vertebræ, while their tubercles, located nearly an inch from their heads, are bound with equal firmness to the lateral processes of the same vertebræ. Only a slight rotatory motion exists at this articulation, which, together with the peculiar shape of the ribs and the flexibility of their anterior attachments, enables the normal inspiratory act to be performed, the ribs at each effort being drawn upward and outward.

Now comes the important fact I wish to impress. It is, that in my method of artificial respiration, owing to the firm attachment of the ribs to the bodies and processes of the vertebræ, as soon as the dorsal region is curved backward and the relative position of the bodies and transverse processes is changed, the ribs and their intercostal muscles open out like the segments of a fan, and, at the same time, owing to their peculiar shape, all of the bodies of the longer ribs are forced outward and the diaphragm is flattened. Thus, both the lateral and vertical diameters of the thoracic cavity are increased.

How much air is actually drawn in and how much reflex action is excited by the inspiratory effort of this or any other method in the first few movements it is difficult, from a clinical standpoint, to determine, but after keeping up the operation for a few moments, in any favorable case, it will be easy to recognize unquestioned evidences of suction.

The infant whose photograph I herewith exhibit was born a little before, and died a short while after, 7 P.M. I was not present at its birth, but reached the bedside a few minutes after death. The photographs were taken at 11 A.M., sixteen hours after death. I then performed my method of artificial respiration, and was able to force air in and out of the lungs with each movement. The evidence was made positive by a very audible sound, excited by the escape of air at each expiratory effort.

It is very frequently, if not usually the case, when resuscitating an infant, that a decided grunt is heard with the expiratory movement after once the introduction of air has been established.

The expiratory movement in this method is one of its most perfect and advantageous features. Indeed, I believe that a complete expiration is, for at least two reasons, of equal, if not greater importance than that of inspiration: 1st, because if one cubic inch, or any given amount of air is drawn in, it is

most desirable that all of it shall be forced out in the movement that follows; 2d, because the expiratory effort in artificial respiration should not serve only for the expulsion of air, but should at the same time be a means of improving and hastening the general circulation.

If the thoracic cavity is thoroughly but gently compressed, the heart and large blood vessels will be unloaded in the direction of least resistance. This, of course, must be forward and in the right direction, as the cardiac aortic and pulmonary valves will open for its forward and close upon its backward flow. The accomplishment of this result with each expiration cannot be otherwise than most beneficial to the sluggish circulation of an asphyxiated infant. The Schultze method fills this requisite, as pointed out by Dr. Lusk in his article upon this subject; but the action is too violent and cannot be regulated with gentleness. The Sylvester method and its modifications, the mouth-to-mouth insufflation, and inflation by catheterization, are all deficient in this particular: they, each of them, depend for their expiratory movement on lateral pressure over the lower ribs, upon the epigastrium, or both together. This plan of expiration is objectionable because: 1. It does not expel all of the air from the lungs, if any has been drawn in. 2. It causes the centre and posterior portion of the flabby diaphragm to descend, thereby increasing the vertical diameter of the chest cavity. 3. It produces but slight, if any, pressure upon the heart and large blood vessels which occupy the mediastinum; certainly not sufficient pressure to be of any material benefit to the circulation.

In the expiratory movement of my method, when the shoulders and chest are brought forward, and at the same moment the thighs are made to rest upon the abdomen, including the epigastric region, the pressure upon the contents of the thoracic cavity can be made as forcible as the operator thinks best. The ribs are crowded upon each other, closing up the intercostal spaces, and the organs of the abdomen are pushed upward upon the diaphragm so as to diminish the vertical diameter as much as it is possible to do. By these combined forces the expulsion of air is complete, and the desired effect upon the heart and large blood vessels is most favorably secured.

A METHOD MUST BE SELECTED.

Every obstetrician who finds that he has delivered an asphyxiated infant proceeds at once to excite the respiratory act

by reflex stimulus. To do this he moves the infant from side to side, spansks it, sprinkles water upon it, and possibly dips it alternately into hot and cold water; but when the asphyxia is too profound to be thus relieved he is forced to resort to some one of the many methods of artificial respiration.

Of the established methods Sylvester's and the plan of mouth-to-mouth inflation are probably by far the most universally adopted, next that of Schultze, then catheterization and insufflation, and finally the individual plans not commonly known. One or more of these methods must be resorted to by every practitioner. Hence it is a matter of unquestioned importance to be able to select the best among them, not only for individual use but for instruction in our schools of medicine.

As previously stated, the Sylvester and the mouth-to-mouth plan offer good inspiratory but very imperfect expiratory movements. The Schultze method, though very efficient, is often inconvenient, is too chilling to the infant, and in many instances is too violent in its movements. Catheterization and insufflation is not easy, and is, as a rule, unsafe in inexperienced hands. Of the individual and private methods I have nothing to say except of the one under consideration.

In maternity hospitals where the obstetrician is offered every facility, and in the homes of the wealthy where there are so many conveniences, the difference between the methods of artificial respiration may not be a question of so much importance; but in that very much larger class of cases occurring in the homes of the middle and poorer people, where there are but few conveniences, he must always endeavor to select the most ready and favorable plan for immediate use.

In any prolonged case of asphyxia the operator will become greatly fatigued in constantly pursuing any one of the methods proposed, and will find great relief in practising first one plan and then another.

ADVANTAGES OF THIS METHOD.

I claim for my method the following facts and advantages:

1. That it is most efficient in all cases where artificial respiration, in asphyxia neonatorum, is indicated.
2. That years of experience have served to prove to others, as well as myself, its unquestioned value.
3. That it can be practised with ease and readiness to the operator.
4. That its movements are easy and can be quickly resorted to at any moment and anywhere.

5. That while its inspiratory movement will be found, by experience at the bedside, to be as efficient as that of other methods, the expiratory movement is far more complete and satisfactory than in any of them.

6. That nearly, or about all, of the air drawn in can be expelled.

7. That, owing to the force and at the same time to the absolute control which the operator has over the expiratory movement, he is able to compress the contents of the thoracic cavity to just exactly that degree deemed by him wisest and best, thereby favoring and hastening the general circulation.



FIG. 4.

8. That this method can be employed before the cord is cut, when it seems important to save as much blood as possible to the infant.

9. That the operator can sit or move from place to place about the room, greatly to his relief from fatigue, still continuing the respiratory movements.

10. That, if thought best, the movements can be kept up while the infant is immersed up to its chin in hot water.

11. That by elevating the buttocks and depressing the head and shoulders, the expulsion of mucus can be effected, as in the Schultze method. (See Fig. 4.)

12. That for alternating with Sylvester's and other methods it possesses peculiar advantages, affording great relief to tiresome positions in protracted cases.

13. That it possesses all of the advantages of the Schultze method and none of its disadvantages.

14. That the method is prompt, reliable, easy to perform, and perfectly safe.

252 WEST FIFTY FOURTH STREET.

CORROBORATIVE EVIDENCE

PRESENTED IN THE DISCUSSION OF THE PAPER BEFORE THE
ACADEMY OF MEDICINE, AS GATHERED FROM ITS
RECORDS, AND FROM NOTES TO THE AUTHOR.

DR. GEORGE TUCKER HARRISON.

I can fully corroborate the statements made by Dr. Dew in the paper we have just heard, as to the inestimable value of the method devised by him for the resuscitation of the asphyxiated new-born child.

This I am enabled to do, not only by seeing its efficiency demonstrated on subjects manipulated by himself, but by clinical evidence garnered in my own practice.

In the treatment of the severer cases of asphyxia neonatorum three indications are to be fulfilled. The air passages must be freed from all foreign substances, air must be carried to the lungs, and the dormant energy of the heart and circulation must be awakened. These three indications are all fulfilled by the use of Dew's method. Some insist that the aspiration of foreign substances in the air passages by catheterization should precede the resort to any method of artificial respiration. In my experience I have not found this necessary in cases in which either Dew's or Schultze's method was practised.

With reference to Schultze's method, it should be said that it also fulfils all the indications of treatment in a most exact manner. It cannot be denied, however, that this disadvantage will always be attached to it—viz., that in the hands of a beginner, or awkward practitioner, dangerous injuries may be inflicted upon the child.

[Here the doctor related a number of cases of injury gathered from different sources illustrative of the danger, and, continuing, said :]

Such accidents are never likely to occur in the hands of an expert in obstetrics, but in the hands of the general practitioner they have occurred and may occur again.

In this regard Dew's method has the great merit that no such

accidents are to be feared. There is no reason why these two methods should not be used alternately in a case of great severity. As a rule, however, the adoption of Dew's method will supersede the necessity of a resort to any other.

DR. VON BEVERHOUT THOMPSON.

It gives me pleasure to indorse Dr. Dew's method of artificial respiration, which I have practised since the winter of 1871, when I saw him perform it for the first time.

Of all the methods described, recommended, and practised, in my opinion his is the simplest and the best.

To prove that inspiration and expiration take place, you will observe, if there is mucus in the nose or mouth, that when the body of the child is doubled up it will be forced out, and when the body is stretched backward it will be sucked in. You can also distinctly hear the air passing in and out of the lungs when the movements of this method are made.

I have seen a good many infants saved by Dr. Dew's method, who, as I believe, had they been treated by any other method, would have died.

DR. WILLIAM A. EWING.

In the resuscitation of asphyxiated new-born infants I have, for more than twenty years, practised the method described by Dr. Dew, and have found it more satisfactory than any other known to me. I first saw the method practised by Dr. Dew, and, so far as I know, it was original with him in all its most practical features.

DR. EGBERT H. GRANDIN.

From practical experience I am able to testify to the worth of the method proposed by Dr. Dew for the resuscitation of asphyxiated infants.

I was not familiar with this method until Dr. Dew called my attention to it in March, 1892. I then directed the house staff in the maternity hospitals with which I am connected to test it thoroughly.

The reports made to me are all in its favor, even as my own personal experience would lead me to expect.

The method appeals to me in particular on account of its simplicity, imitating, as it does, so closely the natural respiratory act. Before resorting to this or any other method the upper air passages must be cleared of mucus, etc. It is also advisable to distend the infant's lungs by mouth-to-mouth insufflation.

This having been done, and it requires but a minute, the infolding and outfolding of the child alternately surely diminishes and increases the thoracic capacity, empties the great blood vessels of their engorged venous supply, and relieves the right heart; in short, not alone is the respiratory act established, but a distinct suction effect is excited on the thoracic circulation.

For venous asphyxia, therefore, this method commends itself to me as the best of any described. It has absolutely no resemblance to the so-called Schröder method, and it does not subject the infant to the risks which Schultze's method does.

In cases of the anæmic form of asphyxia, hot saline rectal irrigation should be an adjuvant.

The nearest approach to Dew's method is the one described by Dr. Harvey L. Byrd, of Baltimore (now deceased), in 1870, and published in the *Baltimore Medical Journal* for the same year. Nevertheless entire credit should be given to Dr. Dew for originality of conception, and he deserves the thanks of the profession for the care which he is taking to popularize what, to repeat, I consider the best of all methods of resuscitation in asphyxia neonatorum.

DR. WILLIAM T. LUSK.

I was shown by Dr. Dew some three or four days ago photographs of his methods, and have had time to think them over.

I believe his method possesses more advantages than any of the three or four most familiar to the profession.

I think, however, that we should not lose sight of the fact that there are no two cases exactly alike, and remember that a method suitable in one case may not be so well suited to another. I think Dr. Dew's method deserves the merit of being placed at the head of the list, but that it is one which should exclude all others I shall have to question.

[Dr. Lusk next emphasized the importance of clearing the air passages of mucus, etc., by mouth-to-mouth suction, the use of the finger in the pharynx, catheterization, etc., and thought that when the heart has begun to beat perceptibly artificial respiration should be performed. He explained the circulation of the new-born and the advantages of Schultze's method in facilitating and aiding it, and in establishing respiration, and then continuing he said:] But the objection to the Schultze method is that if the heart's action is very feeble and the swinging movements are repeated, in a brief period of time the heart will cease to beat altogether and life becomes extinct.

It is therefore of much importance that we should have a

method like that of Dr. Dew's, which disturbs the child but slightly.

Formerly I resorted to Sylvester's method, and from time to time reinforced it, but now I am sure that I shall try the method of Dr. Dew, and I do not believe that it will do any harm once in a while to give the child two or three swings; first, for the purpose of forcibly ejecting mucus from the air passages, and, second, because I believe it gives an impetus to the heart, when once the heart's action is started, which cannot be accomplished as well by any other method.

DR. J. CLIFTON EDGAR

said in part: I desire to thank Dr. Dew for so practically describing his method and comparing it with others. There is one point that I did not understand Dr. Dew to bring out, which in conversation with him some few days since he spoke of, and that was the advantage of this method in that it could be readily used between the thighs of the mother before tying the cord, in those instances of asphyxia neonatorum termed "pallida," where we delay the separation of the cord for the purpose of securing the last half-ounce or ounce of blood obtainable. The method, Mr. President, is undoubtedly a good one, because it is both an easy and a safe method.

DR. EDWARD A. AYERS.

I have practised Dr. Dew's method for six or seven years. I was first led to use it, as it was the only method which permitted placing the child in hot water during the manipulations. To get the needed stimulus of cold water, I usually dip the child for an instant in a cold bath placed conveniently at hand.

That the method so clearly described by Dr. Dew is efficient I have had abundant opportunity of observing.

By bringing the pelvis and knees well up against the ensiform, or as near as needed, and flexing the head and chin well on to the sternum, a very thorough expiration can be secured, clearly evinced by the noise, and by the expulsion of fluids from the nose and mouth. Inspiration can be proven in the same manner.

The longest time occupied in resuscitation was thirty-eight minutes. Dew's method enables me to sustain artificial respiration, and at the same time keep the child in hot water—a factor which frequently makes all the difference between success and failure. Byrd's method, somewhat similar to Dew's, is not so efficient and does not permit us to manipulate the child under water.

Dew's method is most useful, according to my experience, in the pale babies; those suffering from weak heart action, rather than from congestion and stagnation of the blood currents. Schultze's method in this class so chills that the child die from loss of heat before artificial respiration gets a fair chance. The latter method is more efficient for removing mucus and blood.

Every method has its especial value, but from my observations, which have been obtained from about fifteen hundred cases of confinement, I believe, as Dr. Lusk has said, that this method (Dr. Dew's) should stand at the head of the list.

DR. JOSEPH D. BRYANT.

I am fully convinced of the following facts:

1. That extension of the dorsal and cervical spines, in the living or the dead subject, increases the capacity of the thorax, and therefore causes the entrance of air into that cavity, other things being equal.

2. That flexion of the spine and the forcing of the abdominal contents against the diaphragm and thoracic viscera diminishes the capacity of the thorax, and therefore causes expulsion of air through the trachea. The same movement, no doubt, also stimulates the action of the heart by direct contact with it of unusual pressure agencies.

3. That whether or not this method of procedure be better than others of greater repute, in a practical sense, is a matter which can be better decided by those who are constantly employing artificial respiration in their every-day experiences than by myself.

DR. D. H. STEWART.

There seems to be some doubt as to what Schröder's method is. With Dr. Dew's permission I will demonstrate it on his cadaver.

There is nothing new about it. It was described as early as 1868. You take the child in either hand—right or left (Schröder, I believe, begins with the left)—lay it on its back in your hand, the legs and arms hanging down and the chest as in opisthotonos, and that is the position of inspiration; then on its chest and stomach on the other hand (emprosthotonos), and that is the position of expiration.

You keep on reversing the child, changing from hand to hand. That, at least, is the way it was explained to me last summer in Germany.

It is a valueless method, I believe.

